2. (Amended) A method in accordance with claim 1, said method further comprising:

(a) activating a region of the support;

(b) attaching a nucleotide to said region, said nucleotide having a masked reactive site linked to a protecting group;

(c) repeating steps (a) and (b) on other regions of said support whereby each of said other regions has bound thereto another nucleotide comprising a masked reactive site linked to a protecting group, wherein said another nucleotide may be the same or different from that attached in step (b);

(d) removing the protecting group from one of the nucleotides bound to one of the regions of the support to provide a region bearing a nucleotide having an unmasked reactive site;

(e) binding an additional nucleotide to the nucleotide having an unmasked reactive site; and

(f) repeating steps (d) and (e) on regions of the support until a desired plurality of nucleic acids is synthesized, each nucleic acid occupying separate known regions of the support;

wherein said phosphoramidite contaminant is present in an amount of less than about 0.5 mole % as measured by ^{1}H NMR spectrometry.

3. (Amended) A method in accordance with claim 1, wherein said method comprises the sequential steps of:

(a) generating a pattern of light and dark areas by selectively irradiating at least a first area of a surface of a substrate, said surface comprising immobilized nucleotides on said surface, said nucleotides capped with a photoremovable protecting group, without irradiating at least a second area of said surface, to remove said protecting group from said nucleotides in said first area;

(b) simultaneously contacting said first area and said second area of said surface with a first nucleotide to couple said first nucleotide to said immobilized nucleotides in

said first area, and not in said second area, said first nucleotide capped with said photoremovable protecting group;

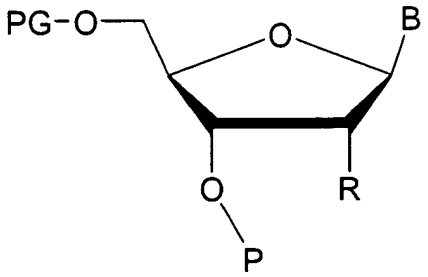
(c) generating another pattern of light and dark areas by selectively irradiating with light at least a part of said first area of said surface and at least a part of said second area to remove said protecting group in said at least a part of said first area and said at least a part of said second area;

(d) simultaneously contacting said first area and said second area of said surface with a second nucleotide to couple said second nucleotide to said immobilized nucleotides in at least a part of said first area and at least a part of said second area; and

(e) performing additional irradiating and nucleotide contacting and coupling steps so that a matrix array of at least 100 nucleic acids having different sequences is formed on said support.

4. (Amended) A method in accordance with claim 1, wherein said contaminant is present in an amount of less than about 0.2 mole % as measured by ^{1}H NMR spectrometry.

5. (Amended) A method in accordance with claim 1, wherein said protected nucleoside phosphoramidite monomers have the formula:



wherein

B is a member selected from the group consisting of adenine, guanine, thymine, cytosine, uracil and analogs thereof;

R is a member selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halogen and alkoxy;

P is a phosphoramidite group; and

PG is a photoremovable protecting group.

12. (Amended) A method in accordance with claim 3, wherein each different nucleic acid is in a region having an area of less than about 1 cm^2.

13. (Amended) A method in accordance with claim 3, wherein each different nucleic acid is in a region having an area of less than about 1 mm^2.

14. (Amended) A method in accordance with claim 5, wherein said phosphoramidite contaminant is present in an amount of less than 0.2 mole % as measured by ^1H NMR spectrometry.

15. (Amended) A method in accordance with claim 5, wherein B is selected from the group consisting of adenine, guanine, cytosine and thymine, R is hydrogen, and said phosphoramidite contaminant is present in an amount of less than 0.2 mole % as measured ^1H NMR spectrometry.

16. (Amended) A method in accordance with claim 5, wherein B is selected from the group consisting of adenine, guanine, cytosine and thymine, R is hydrogen, PG is MeNPOC and said phosphoramidite contaminant is present in an amount of less than 0.2 mole % as measured ^1H NMR spectrometry.

17. (Amended) A method in accordance with claim 5, wherein B is selected from the group consisting of adenine, guanine, cytosine and thymine, R is hydrogen, PG is MeNPOC, P is $-P(OCH_2CH_2CN)N(iPr)_2$ and said phosphoramidite contaminant is present in an amount of less than 0.2 mole % as measured ^1H NMR spectrometry.